

Takahashi, Shuji

A weighted equation approach to decay rate estimates for the Navier-Stokes equations.
(English) [Zbl 0941.35066](#)
[Nonlinear Anal., Theory Methods Appl. 37, No. 6, A, 751-789 \(1999\).](#)

The nonstationary incompressible Navier-Stokes equation in $\mathbb{R}^n (n \geq 2)$ is considered. The goal of this paper is to show almost optimal uniform decay estimates (i.e., almost the same decay rate estimates as those for heat equations), for weak solutions of the Navier-Stokes equation in the class $L^s(0, \infty; L^q(\mathbb{R}^n)^n)$ with $n/q + 2/s = 1$ and $\|u\|_{q,s} \ll 1$, under prescribed decay rates of external forces. The decay rates of the solution and complete proofs are given.

Reviewer: [O.Dementev \(Chelyabinsk\)](#)

MSC:

[35Q30](#) Navier-Stokes equations
[35B40](#) Asymptotic behavior of solutions to PDEs

Cited in **21** Documents

Keywords:

[regularity class](#); [optimal decay rates in space-time](#); [nonstationary incompressible Navier-Stokes equation](#)

Full Text: [DOI](#)